

## CLAIMS

What is claimed is:

- 5                   1.     A method of preconcentrating trace analytes by:  
                      extracting polar and/or non-polar analytes through a sol-gel  
                      extraction medium.
2.     A method according to claim 1 wherein said extracting  
10     step is further redefined as feeding a sample through a sol-gel coated inner  
                      surface of a tube and extracting the analytes from the sample with the sol-gel  
                      coating.
3.     A method according to claim 2 wherein said feeding step  
15     is further defined as passing the sample through a capillary tube, the tube  
                      including a sol-gel coated inner surface.
4.     A method according to claim 2 wherein said feeding step  
                      is further defined as passing the sample through a sol gel monolithic bed.  
20
5.     A method according to claim 1 wherein the organic  
                      component of the sol-gel is selected from the group including sol-gel-active  
                      forms and/or derivatives of poly(ethylene glycol),  
                      poly(methylphenylsiloxane), poly(dimethyldiphenylsiloxane),  
25     poly(dimethylsiloxane), poly(methylcyanopropylsiloxane), octadecylsilane,  
                      octylsilane, crown ethers, cyclodextrins, calixarenes, dendrimers,  
                      poly(styrene), poly(styrene-divinylbenzene), poly(acrylate), molecularly  
                      imprinted polymers, etc.
- 30                   6.     A method according to claim 1 further including the step  
                      of thermally desorbing the analytes from the sol-gel extraction medium.

7. A method according to claim 1 further including the step of desorbing the analytes from the sol-gel extraction medium.

5 8. A method according to claim 6 further including the step of applying the extracted analytes to a GC capillary column.

9. A method according to claim 7 further including the step of applying the extracted analytes to a liquid phase separation technique.

10 10. A method according to claim 1 further including the steps of preconditioning the sol-gel prior to said extracting step.

11. A method according to claim 8 wherein said preconditioning step is further defined as simultaneously heating and purging  
15 an inert gas over the sol-gel.

12. A microextraction method including the steps of microextraction polar and non-polar analytes in a sol-gel extraction medium;  
20 desorbing the analytes from the sol-gel and analyzing the extracted, desorbed analytes.